



May 2021

Welcome to AP Biology!

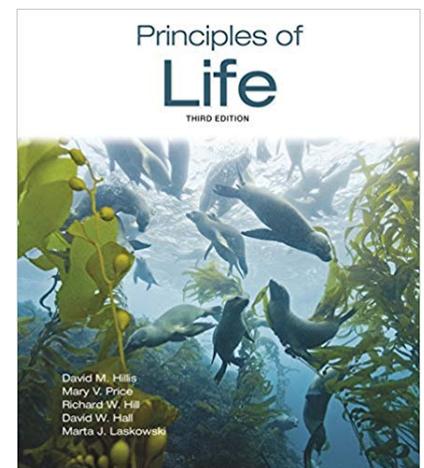
Once you have confirmed that you are in the class, the main piece of your summer assignment is to read the first two chapters of your Biology book using the attached reading guide. Sit down and plow through it now! In addition, when you finish these two chapters and want to read ahead to make your year easier, let me know and I will get you more chapter assignments to do. Every year, students tell me that they wished they actually did this.

The first two chapter readings are due the first Monday of school.

You can buy or rent the book from anywhere online or from a past student. A used book is running on Amazon.com for about \$80 (at the end of April). You can earn a little of that back too by selling it to the next year of students. Please make sure that the book you buy has not been highlighted as that will just confuse you! If you have trouble getting the book, please contact me and we can see what we can work out.

What you need to do now:

1. Once schedules come out, or you check with your counselor or me to make sure you are enrolled, send me an email confirming that you are in the class from your school email account.
2. Get the book, “Principles of Life” by Hillis et al. **THIRD EDITION**



What you need to do soon:

3. Start your summer reading. Please do not wait until the night before the assignment is due to start reading the book. I cannot retain that much information in one night and I imagine that you cannot either. Don't waste your time; spread out your reading. And if you can, get ahead.

I am looking forward to working with you,

Geoffrey Brinker
gbrinker@lps.k12.co.us

HHS AP Biology
Topic 1A: Intro to Biology and Chemistry Basics
Ch. 1

To keep in mind for all chapters:

1. Incorporate case studies and data somehow...

Case studies and data tables are the basis for the longer questions on both class and AP exams. Biology is based on the world around us and you **MUST** have examples and data to back up your technical knowledge.

2. Use the following seven overall Themes in Biology as an organizational framework:

1. Cells are the basic functional unit that humans have accepted as alive, although there are grey areas. They are the basis for almost all processes and interactions that we will examine this year.
2. Genetics is the basis for the proteins that construct our body. Many, but not all clues to our functioning reside here.
3. Evolution is organismal change over time. It has a past and a future and we need to be aware of both as humans on this planet. Mutations are its driving force.
4. Diversity is important and we need to understand that and work to maintain it.
5. Form and function are closely tied together and are seated in genetics and evolution.
6. Ecology is the study of the natural world and it is quickly becoming a dominant force in science and engineering.

3. Efficient and organized systems for collecting and organizing information is paramount.

Part of an AP class is learning how to efficiently and effectively extract information from a text. I will model one possible set up for you in this chapter, but soon you will have to create or choose an organized system that works for you.

4. Pacing is imperative

If a person does not pace oneself and do a little every day, then s/he will be unsuccessful in retaining the information. Make a goal of reading four to five pages a night from the book and/or answering 8-10 questions.

So, on we go to this specific assignment.

Studying Model One: Vocabulary and Concept Question Columns

The columns are for organizational purposes in terms of the assignment. Please do not turn in your assignment in three columns. Yes, you need to follow each studying model. They will change each week for about ten weeks and then you will settle in to one that works the best for you.

For the first column: Using not the glossary, but rather the text, write a definition for the vocabulary words listed as you read. Remember, for full credit, a definition should almost always include both what something is as well as what it does. It can also include examples, connections to other concepts, or its importance to biology.

*The point that I am trying to make is this: It is not enough to just copy down the definition from the glossary or web; you need to understand both what it means as well as its connection to the rest of the material.

For the second column: Use the text to answer the following questions. In future assignments, if questions are not provided, one approach would be to take notes on each section listed and then generate a question. Well-formed and thoughtful questions may then be used on the unit tests.

For the third column: As you are reading, put stars next to the figures and examples that you believe are quite important. Then make a list of the important figures and examples along with a description of what they show. For your writing, explain why the figure is important, do not restate what it shows. You are trying to coax out the importance of the figure. Why did the author use a quarter page or more for this image? What are its connections? What is the point? Figures are also an important part of test review because they provide a great summary of essential concepts as one begins to review for a test. In this case, I have listed the important figures to give you an idea of what important. Do not just copy down the caption, do some summary thinking.

Vocabulary Terms	Concept Questions and Notes	Important Figures and what they show
<p>* Particularly important</p> <p>These terms are not in the order in which they appear in the chapter.</p> <ul style="list-style-type: none"> • Organism • Cell • Prokaryotes (Bacteria and Archaea) • Eukaryotes • Organelles <ul style="list-style-type: none"> ○ Nucleus ○ Endosymbiosis ○ Chloroplasts ○ Mitochondria ○ Photosynthesis • Cellular specialization • Aerobic metabolism • Anaerobic metabolism • Phylogenetic tree <ul style="list-style-type: none"> ○ Archaea ○ Bacteria ○ Eukarya • Hierarchy of life from atoms to biosphere (define each in order) • System • Components vs. Processes • Regulatory systems that respond to <ul style="list-style-type: none"> ○ Positive feedback ○ Negative feedback • Genome • Nucleic acids • DNA • Gene • Protein • Mutation • Evolution • Natural selection • Adaptation • Theory • Hypothesis • Data • Variable • 	<p>This chapter is a little weird as it tries to give you an overview of the entire book but then expects you to know all of the vocab later on. So, there is a little bit of disjunction here. Oh well.</p> <ol style="list-style-type: none"> 1. What is the Single Origin Theory and why is it important in terms of Biology and this course? 2. Using more than just the definitions, distinguish between proximal and ultimate explanations. 3. Explain the difference between a hypothesis and a theory in science. In addition, explain why the public and news media often get confused by this and some of the problems that it creates. 4. Why has the process in Figure 1.12 been accepted by the scientific community as a valid way to investigate the natural world? 5. What is a null hypothesis? How does it work? Why is the scientific method based upon null hypotheses? 6. Using more than just the definitions of each (include information from the figures perhaps), distinguish between the controlled experiment in Figure 1.14 and the comparative experiment in Figure 1.15. <ol style="list-style-type: none"> a) Explain why a scientist would choose to perform a controlled experiment. Find an example of a recent biological controlled experiment in the news and discuss it. b) Explain why a scientist would pick a comparative experiment. Find an example of a recent comparative experiment in the news and discuss it. 	<p>Figure 1.1 Figure 1.4 Figure 1.5 Figure 1.8 Figure 1.10 Figure 1.12</p>

HHS AP Biology
Topic 1B: Intro to Biology and Chemistry Basics
Ch. 2: 2.1, 2.2, 2.5

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Studying Model Two: Sticky Note Summaries

You do not have to do these in columns, and you can choose to do it in sections if you prefer.

For the first column: Using not the glossary, but rather the text, write a definition for the vocabulary words listed as you read. Remember, for full credit, a definition should almost always include both what something is as well as what it does. It can also include examples, connections to other concepts, or its importance to biology.

*The point that I am trying to make is this: It is not enough to just copy down the definition from the glossary or web; you need to understand both what it means as well as its connection to the rest of the material.

For the second column: Drawing out important information from the text is more involved than just writing down the bold words and looking them up in an online dictionary. Part of reading is learning to draw out important ideas from the text. For each small section, preceded by bold black words (not the concept sections but the little ones within the concepts), summarize the section in one short blurb on a sticky note. This note should not include vocabulary, but rather should focus on content that is not covered by the vocab works in the section. Stick it over the section as you read it. Then, if you like, go back and type each heading into a document with your summary transcribed below each.

For the third column: As you are reading, put stars next to the figures and examples that you believe are quite important. Then make a list of the important figures and examples along with a description of what they show. For your writing, explain why the figure is important, do not restate what it shows. You are trying to coax out the importance of the figure. Why did the author use a quarter page or more for this image? What are its connections? What is the point? Figures are also an important part of test review because they provide a great summary of essential concepts as one begins to review for a test. In this case, I have underlined the important figures to give you an idea of what important.

Vocabulary Terms	Sticky Note summaries	Important Figures and what they show
<p>* Particularly important</p> <ul style="list-style-type: none"> • Atoms and their components • Molecules • Polar • Nonpolar • Chemical bond <ul style="list-style-type: none"> ○ Covalent bond ○ Polar covalent bond ○ Ionic bond/attraction ○ Van der Waals interactions ○ *Hydrogen bond and solvency • Ions <ul style="list-style-type: none"> ○ Anion ○ Cations • *Heat capacity • *Cohesion • *Adhesion • Surface tension • *Hydrophilic • *Hydrophobic • Macromolecule <ul style="list-style-type: none"> ○ *Monomer ○ *Polymer • Chemical reaction • *Dehydration synthesis (condensation) reactions • *Hydrolysis reactions • Potential energy • Kinetic energy • Products • Reactants • Metabolism • Anabolic reactions • Catabolic reactions • Exergonic • Endergonic • *First law of thermodynamics • *Second law of thermodynamics • Entropy • pH <ul style="list-style-type: none"> ○ Acid ○ Base • Buffer 	<ol style="list-style-type: none"> 1. Do the sticky-note summaries note taking model as described above. <p>Additional questions to answer</p> <ol style="list-style-type: none"> 2. Explain why carbon is the basis of life's molecules. 3. *Explain the importance of water and why its atomic structure is so important to the existence of life. Be sure to include it's density before and after freezing, high heat capacity, cohesion, adhesion, and action as a solvent. 4. *Examine Figure 2.14 <ol style="list-style-type: none"> a. What category of scientific experiment is this based on your reading of Chapter One? b. Hypothesize on the steps that would next need to occur for the products of this experiment to even begin to organize into something resembling life. c. Answer the three questions found in the figure. 5. Do the three questions in Visual Summary Section 2.4 	<p>Figure 2.4 Table 2.1 Figure 2.5 Figure 2.6 Figure 2.7 *Figure 2.9 *Figure 2.11 *Figure 2.12 *Figure 2.13 *Figure 2.15 Table 2.2 Figure 2.16</p>